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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,371	07/26/2006	Ho Sung Cho	AMBX-0028.00US	1687

45811 7590 07/26/2010

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EXAMINER	
SHAFER, SHULAMITH H	

ART UNIT	PAPER NUMBER
1647	

MAIL DATE	DELIVERY MODE
07/26/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/587,371	CHO ET AL.	
	Examiner	Art Unit	
	SHULAMITH H. SHAFER	1647	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 June 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-60 and 62-83* is/are pending in the application.

4a) Of the above claim(s) *1-43,46-58 and 62-83* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *44,45,59 and 60* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/1/2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

Status of Application, Amendments, And/Or Claims:

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1 June 2010 has been entered.

Applicants' amendment of 1 June 2010 is acknowledged. Claim 61 is cancelled. Claim 44 is amended and the amendment made of record.

Claims 1-60 and 62-83 are pending in the instant application. Claims 1-43, 46-58 and 62-83 stand withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Claims 44, 45, 59 and 60 are under consideration, wherein the selector codon may be an amber, ochre or opal codon.

Information Disclosure Statement:

The Information Disclosure statements (IDS) submitted on the 1 June 2010 has been considered. The signed copy is attached.

Withdrawn Rejections

Claim 61 has been canceled. All rejections of the claim are hereby moot.

The rejection of Claims 44, 45, 59 and 60 under 35 U.S.C. 112, second paragraph, is withdrawn in light of Applicants' amendment of claim 44. The claim has been amended to delete "efficiently and selectively recognizes", thereby obviating the rejection.

Maintained Rejections

35 U.S.C. § 102:

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The rejection of Claims 44, 45, 59 and 60 under 35 U.S.C. 102(e) as being anticipated Schultz et al. (US 2003/0082575, filed 10 April 2002, the '575 reference) is maintained for reasons of record and for reasons set forth below.

The '575 reference teaches an isolated nucleic acid comprising at least one selector codon, wherein the selector codon may be the amber codon; the selector codon, which may be an amber codon, when translated, inserts an unnatural amino acid [paragraph 0031]. The isolated nucleic acid encodes a therapeutic protein which may be an interferon, erythropoietin (EPO), G-CSF or human growth hormone [paragraph 0033], thus anticipating the limitations of claims 44 and 45. The '575 reference teaches using translation systems that can incorporate unnatural amino acids into protein [paragraph 0024]. Typically, the O-RS preferentially aminoacylates the O-tRNA with at least one unnatural amino acid in the translation system and the O-tRNA recognizes at least one selector codon, as recited by claim 60. The translation system thus inserts the unnatural amino acid into a protein produced in the system, in response to an encoded selector codon [paragraph 0025]. The translation systems include host cells, such as bacterial cells (e.g., Escherichia coli), archeaebacterial cells, eukaryotic cells (e.g., yeast cells, mammalian cells, plant cells, insect cells) [parargraph 0026], as recited in claim 59. The translation system is provided with at least one nucleic acid comprising at

least one selector codon, wherein the nucleic acid encodes the at least one protein, an orthogonal tRNA (O-tRNA), that functions in the translation system and recognizes the at least one selector codon and an orthogonal tRNA synthetase (O-RS) [paragraph 0036].

Therefore, the teachings of the '575 reference anticipate all the limitations of claims 44, 45, 59 and 60.

It is noted that claim 44, the independent claim of the instant invention has been amended to recite "wherein the polynucleotide is translated by the translation system to produce a four helical bundle (4HB) polypeptide agonist selected from the group consisting of human growth hormone, interferon, erythropoietin, and granulocyte cell stimulating factor .....". In the absence of any definition of the term "four helical bundle (4HB) polypeptide agonist", it is the Examiner's position that a therapeutic peptide, such as interferon, erythropoietin (EPO), G-CSF or human growth hormone as disclosed by the '575 reference would be encompassed the term "four helical bundle (4HB) polypeptide agonist", as said biologically active, therapeutic protein would be an agonist of its cognate receptor.

Applicants traverse the rejection (Response of 1 June 2010, page 1, last paragraph.

Applicants argue that "Claim 44 has been amended to recite that the 4HB polypeptide is an agonist. The '575 reference does not produce any 4HB or 4HB polypeptides that have agonist activity".

Applicants' arguments have been fully considered but are not found to be persuasive for the following reason:

As noted above, Applicants have presented no definition of the term "agonist" which would distinguish a "four helical bundle (4HB) polypeptide agonist" from the biologically active four helical bundle (4HB) polypeptide as taught by the '575 reference. The '575 reference teaches proteins comprising unnatural amino acids may be used in therapeutic treatments [paragraph 0021]. The proteins are homologous to the wild type protein but comprise one or more unnatural amino acid homologues. Among the therapeutic proteins taught by the '575 reference are interferons, erythropoietin, human

growth hormone and G-CSF [paragraph 0033], proteins recited in claim 44 of the instant invention and identified in the disclosure of the instant invention as proteins comprising a four helical bundle [paragraph 0003 of PGPUB 20080300163, the PGPUB of the instant invention]. Absent evidence to the contrary, a therapeutic, biologically active polypeptide, as taught by the '575 reference would "agonize" its cognate receptor.

The rejection is thus maintained.

The rejection of Claims 44, 45, 59 and 60 under 35 U.S.C. 102(e) as being anticipated Chin et al. (US 2005/0009049, filed 16 April 2004, priority claimed to provisional applications 60/463,869 (filed 4/17/03), 60/479,931 (filed 6/18/03), 60//493,014 (filed 8/5/03) and 60/496,548 (filed 8/5/03), the '049 reference) is maintained for reasons of record and for reasons set forth below.

The '049 reference teaches a nucleic acid that comprises a polynucleotide that encodes a polypeptide of interest [paragraph 0016] which may be an interferon, erythropoietin (EPO), human growth hormone, and a G-CSF, which are all polypeptides disclosed as 4HB polypeptides by the specification of the instant invention [paragraph 0038]. The polynucleotide comprises a selector codon that is recognized by the O-tRNA. The selector codon may be an amber codon, an ochre codon, or an opal stop codon [paragraph 0047]. Thus the limitations of claims 44 and 45 are anticipated.

The '049 reference teaches compositions of orthogonal tRNAs, orthogonal synthetases and pairs thereof, in eukaryotic cells and methods of producing proteins in eukaryotic cells that include unnatural amino acids [paragraph 0003]. The eukaryotic cell comprises an orthogonal tRNA synthetase (O-RS), an orthogonal tRNA (O-tRNA), and a nucleic acid that comprises a polynucleotide that encodes a polypeptide of interest [paragraph 0016]. The '049 reference teaches methods for producing, in a eukaryotic cell, at least one protein comprising at least one unnatural amino acid. The methods include, growing, in an appropriate medium, a eukaryotic cell that comprises a nucleic acid that comprises at least one selector codon and encodes the protein of interest. The eukaryotic cell also comprises an orthogonal tRNA (O-tRNA) that functions

in the cell and recognizes the selector codon and an orthogonal tRNA synthetase (O-RS) [paragraph 0042]. Therefore, the limitations of claims 59 and 60 are anticipated.

Thus, the teachings of the '049 reference anticipates all the limitations of claims 44, 45, 59 and 60.

As discussed above, it is noted that claim 44, the independent claim of the instant invention has been amended to recite "wherein the polynucleotide is translated by the translation system to produce a four helical bundle (4HB) polypeptide agonist selected from the group consisting of human growth hormone, interferon, erythropoietin, and granulocyte cell stimulating factor …..". In the absence of any definition of the term "four helical bundle (4HB) polypeptide agonist", it is the Examiner's position that a biologically active peptide, such as interferon, erythropoietin (EPO), G-CSF or human growth hormone as disclosed by the '049 reference would be encompassed the term "four helical bundle (4HB) polypeptide agonist", as said biologically active protein would be an agonist of its cognate receptor.

Applicants traverse the rejection (Response of 1 June 2010, 2nd page, 1st paragraph). The reason for the traversal is:

Applicants argue "Chin does not produce any 4HB polypeptides, or any 4HB polypeptide agonists."

Applicant's arguments have been fully considered but are not found to be persuasive for the following reasons:

The '049 reference teaches polynucleotides encoding therapeutic proteins homologous to the wild-type protein comprising one or more unnatural amino acids [paragraph 0036]. Among the polypeptides of interest taught by the reference are interferon, erythropoietin, human growth hormone and granulocyte colony stimulating factor [paragraph 00389] proteins recited in claim 44 of the instant invention and identified by the disclosure of the instant invention as proteins comprising a four helical bundle [paragraph 0003 of PGPUB 20080300163, the PGPUB of the instant invention]. As noted above, Applicants have presented no definition of the term "agonist" which would distinguish a "four helical bundle (4HB) polypeptide agonist" from the biologically

active four helical bundle (4HB) polypeptides taught by the '049 reference. Absent evidence to the contrary, a therapeutic, biologically active polypeptide, as taught by the '049 reference would "agonize" its cognate receptor.

The rejection is thus maintained.

Conclusion:

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SHULAMITH H. SHAFER whose telephone number is (571)272-3332. The examiner can normally be reached on Monday through Friday, 8 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Nickol, Ph.D. can be reached on 571-272-0835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shulamith H. Shafer/
Examiner, Art Unit 1647